COOPER Tools

Operation & Service Manual
823197 **2/01**

Cleco®

104, 174 & 254 Series Screwdrivers

5	XX	A	X	TP	-	XXX	B	-	Q

Tool Type:

RS **Rev. Slide Screwdriver**

Torque Control Mechanism:

A **Clecomatic**

U **Top Air Inlet**

Output Drive:

Q **Quick Change**

Generation:

B **Second**

Gear Train Designation:
104 174 254

Handle:

TP **Pistol (Trigger Start)**

NORTH AMERICA

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OPERATING INSTRUCTIONS

READ SAFETY RECOMMENDATIONS BEFORE CONNECTING TOOL.

OPERATION

CLECOMATIC Models
No. 5 Series CLECOMATIC screwdrivers are automatic shut-off tools. Accurate torque is achieved by setting the CLECOMATIC clutch to the desired torque. The tool will automatically shut off at this preset torque.

The RSATP model is designed to start when the trigger is pulled and stops when the clutch reaches the set torque or the trigger is released. Releasing the trigger will reset the tool for the next cycle.

CLUTCH ADJUSTMENT

The clutch is adjusted through the slot provided in the clutch housing. The slot cover will have to be rotated to expose the adjustment slot. Rotate the clutch until the hole in the adjustment lock plate is visible. Insert a No. 1 Phillips screwdriver and rotate in a clockwise direction to increase the torque setting or a counterclockwise direction to decrease the setting.

⚠ CAUTION If the clutch is adjusted over the maximum power output of the tool, the clutch will not function and the tool will operate like a stall-type tool. Also, if the tool is being operated at its upper torque limits, a drop in air pressure could cause the clutch not to function due to a loss of motor power and the tool will function like a stall-type tool. If tool stalls, operator must resist stall torque until throttle is released.

Operational check: Grip tool securely and be prepared to counteract stall torque in case clutch is improperly adjusted.

AIR SUPPLY

The tool is designed to operate at 90 psig (6.2 bar) air pressure. The air pressure should be checked at the tool's air inlet while the tool is running.

The use of an automatic in-line filter-regulator-lubricator is highly recommended. This will supply the tool with clean, lubricated air, keep it in sustained operation, and increase tool life.

For maximum performance, use a 1/4" (6.5mm) I.D. air hose up to 8 feet in length. If additional length is required, a 3/8" (9.5mm) I.D. or larger hose should be connected to the 1/4" (6.5mm) I.D. hose.

The air hose should be cleared of accumulated dirt and moisture, then one-quarter (1/4) teaspoon (6.5cc) of 10W machine oil should be poured into the tool's air inlet before connecting the hose to the tool.

LUBRICATION

The in-line lubricator should be checked regularly and filled with a good grade of 10W machine oil. In the event a line lubricator is not used, tools should be disconnected from the air supply several times daily and several drops of oil poured into the tool's inlet bushing.

Application of the tool should govern how frequently it is greased. It is recommended that the idler gears receive a generous amount of NLGI 2-EP grease after every 40 hours of operation. The clutch housing (left hand threads) and clutch must be removed and the grease applied through the hex in the spider.

SERVICE INSTRUCTIONS

DISASSEMBLY - GENERAL (All Models)

Clamp the handle in a soft-jawed vise and using a wrench unscrew the quick change chuck (left hand threads). Unscrew the clutch housing from gear case. Unscrew and remove the gear case assembly from the handle. The motor unit may now be removed from the backhead.

CLUTCH DISASSEMBLY

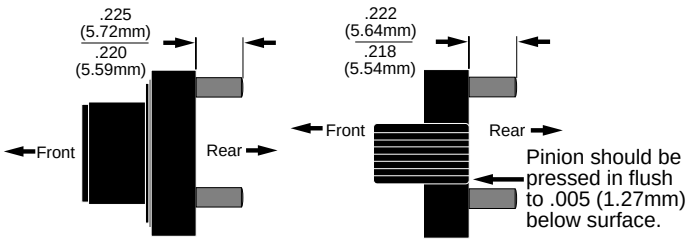
Clecomatic Clutch:
Unscrew (left hand threads) the adjustment nut 869123, and remove the adjustment lock ring 869140. The torque spring, bearing races 863455, thrust bearing 847104, ball retainer, 203573, and four (4) steel balls 842161, may now be removed from the clutch spindle.

Washing the remaining spindle asembly in a solvent will aid disassembly. Remove the ball retainer ring 203574, and ball retainer plug 869149, from the clutch cam 203572. Rotate the clutch spindle, to allow the thirteen (13) steel balls 842980, to drop out of the ball loading hole located in the clutch cam. Separate the clutch spindle and clutch cam, being careful not to lose the reset pin 869112, reset spring 203585, reset pin stop 869424, trip slide 203612, trip slide reset spring 203613, and dowel pin 617226.

Quick Change Chuck
Removing retainer ring 833688, will release all parts in the quick change chuck. The rest of the clutch disassembles the same as finder clutch.

GEAR TRAIN DISASSEMBLY

-104 Gear Train
Spiders should be removed from the rear of the gear case. Remove the bearing retainer ring 619017 and press the spider bearing 847595, out the front of the gear case. If replacement of the idler gear pins is necessary, they should be pressed out the rear of the spider. If replacement of the first reduction spider pinion 869132 is necessary, if should be pressed out the front of the spider. See Figure 1 for replacement dimensions.



2nd Red. Spider **1st Red. Spider**

Fig. 1: -104 Gear Spider Gear Train:

-174 Gear Train
When pressing the spider assembly out of the rear of the gear case 869162, be sure the idler gears 869163, are in line with the pockets machined in the gear case.

Press the idler gear pins 833862, out the rear of the spider 869155, for inspection of the idler gear pins and idler gears 869163.

Remove the bearing retainer ring 619017, and press the front spider bearing 847595, out the front of the gear case.

-254 Gear Train:
Press the spider assembly out the rear of the gear case. Remove the bearing retainer ring 619017, and press the front spider bearing 847595, out the front of the gear case.

If replacement of the idler gear pins, is necessary, they should be pressed out the rear of the spider. See Figure 2 for replacement pin height.

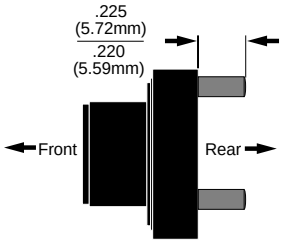


Fig. 2: -254 Gear Spider

MOTOR DISASSEMBLY — (All Models)

Slip the front bearing 842768, and front bearing plate 203641, off the front of the rotor and remove the cylinder 203504, and four (4) rotor blades 203615. Set the rear bearing plate on the vise jaws with the rotor hanging down. Use a 3/16" (4.8mm) punch to drive the rotor out of the rear rotor bearing 842768.

HANDLE DISASSEMBLY — (All Models)

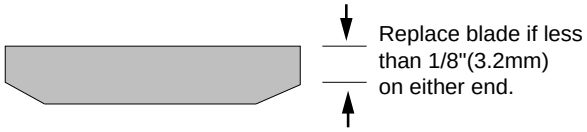
For inspection or replacement of the throttle valve or related parts, rol down the grip sleeve and drive trigger bushing retainer pin out and removing bushing. Shut off valve and seal can be removed by removing 203559 valve cap.

The reversing valve may be removed by first unscrewing the reversing valve screw out of the reversing valve knob. Then reversing valve may be removed from the handle. On reassembly make sure the reversing valve screw aligns with the threaded hole in reversing valve.

REASSEMBLY — GENERAL

IMPORTANT: During reassembly of the complete tool, the gear case should be tightened to the handle to 20 ft. lbs. (27Nm). Wrenches can be ordered for performing this task.

All parts should be washed in a solvent and inspected for damage or wear. Particular attention should be given to all bearings, gears, gear pins, and rotor blades as failure of these parts could cause damage to more expensive parts. Rotor blades should be replaced if they measure less than 1/8" (3.2mm) on either end. Rotor blades should be sized in length to .003"/.004" (.08mm/.10mm) shorter than the cylinder.



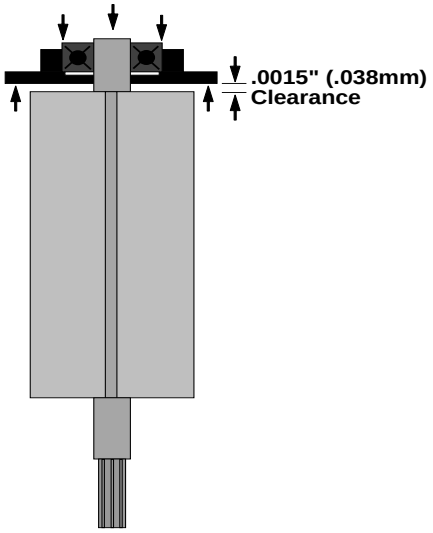
Inspect and replace any "O"-rings or seals that show signs of wear of deterioration. All gears, gear pins, and open bearings should receive a generous amount of NLGI 2-EP grease during reassembly. Reassembly of all of the various subassemblies is in reverse order of disassembly: however, the following paragraphs list some of the more important reassembly procedures.

CLUTCH REASSEMBLY

Clecomatic Clutch:
During reassembly of the clutch, all parts should receive a thin coating of 10W machine oil. In addition, the ball retainer 203573, should receive a generous amount of NLGI 2-EP grease. When installing the dowl pin 617226, the tapered end goes into the clutch cam first. The trip slide 203612, goes into the clutch cam cupped-end first. All parts installed into the clutch spindle and clutch cam 203572, should be checked for smooth operation before complete assembly of the clutch.

MOTOR REASSEMBLY

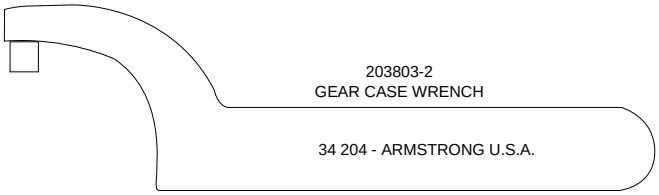
Install the rear rotor bearing, into the rear bearing plate 203506. If using new parts, check for burrs or nicks. After installing new cylinder pins, check for burrs around pins. Press the bearing plate assembly (press on the bearing's inner race) onto the rear rotor shaft until there is approximately .0015" (.04mm) clearance between the rear bearing plate and rotor.

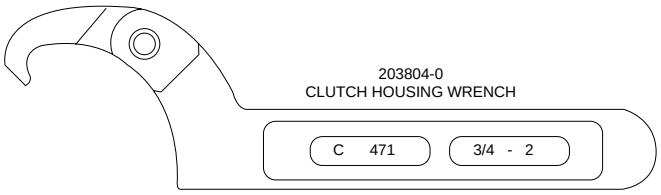


TRIP ROD SIZING

The trip rod No. 203586, should be sized to allow approximately 1/8" (3.2mm) throttle valve opening.

IMPORTANT: During reassembly of the complete tool, gear case should be tightened to handle to 20 ft. lbs. (27Nm). Wrenches shown below can be ordered to tighten the gear case and clutch housing.

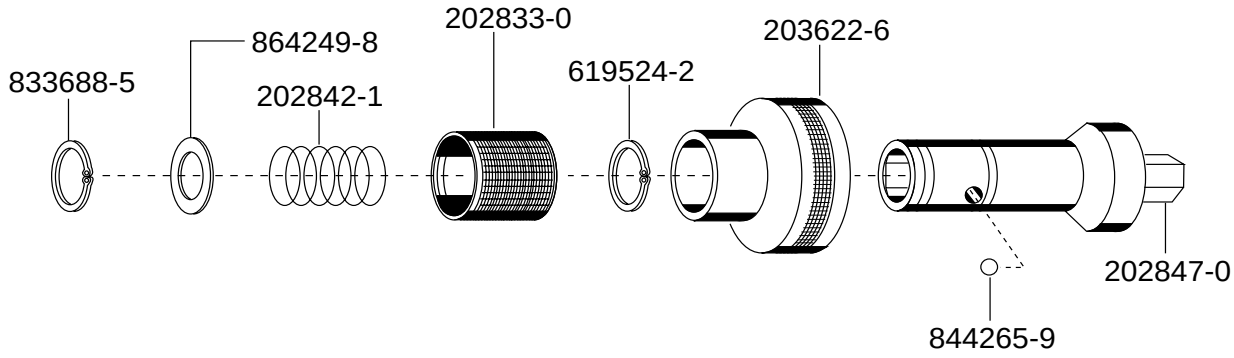




SAFETY CHECK

After repair or replacement of parts, tools should be tested to verify that they are functioning properly.

5 SCREWDRIVER STALL SPINDLE



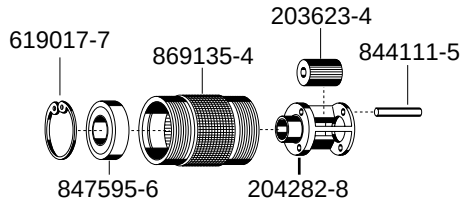
PARTS LIST — 5 SCREWDRIVER STALL SPINDLE

Part No.	Name of Part	Qty.
202833-0	Release Collar	1
202842-1	Release Collar Spring	1
202847-0	Spindle	1
203622-6	Spindle Housing	1
619524-2	Retainer Ring	1
833688-5	Retainer Ring	1
844265-9	Ball (1/8"/ 3.175mm)	1
864249-8	Washer	1

The complete clutch can be purchased using this number: 201219-3

5 SCREWDRIVER -104, -174 & -254 2ND REDUCTION GEAR TRAIN

-104, -174 & -254 2ND REDUCTION GEAR TRAIN

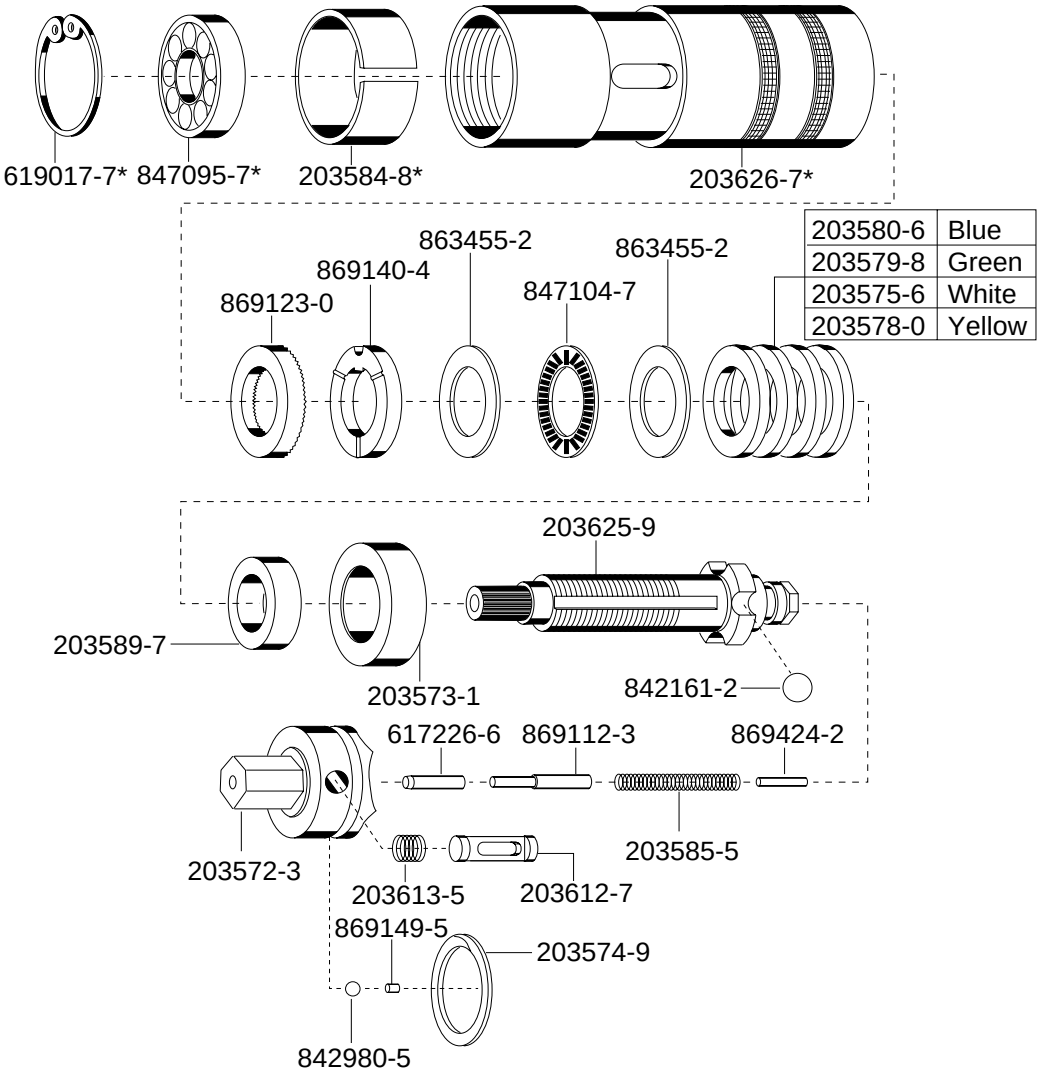


PARTS LIST — -104, -174 & -254 GEAR TRAIN

PART NO.	NAME OF PART	QTY.
203623-4	Idler Gear (14T)	3
203978-2	Spider	1
204282-8	Cage	1
619017-7	Bearing Retainer Ring	1
844111-5	Idler Gear Pin	3
847595-6	Spider Bearing	1
869135-4	Gear Case (41T)	1

The complete gear train can be purchased as a subassembly using part no. 201659-0.

5 CLECOMATIC CLUTCH
FOR -104, -174 & -254



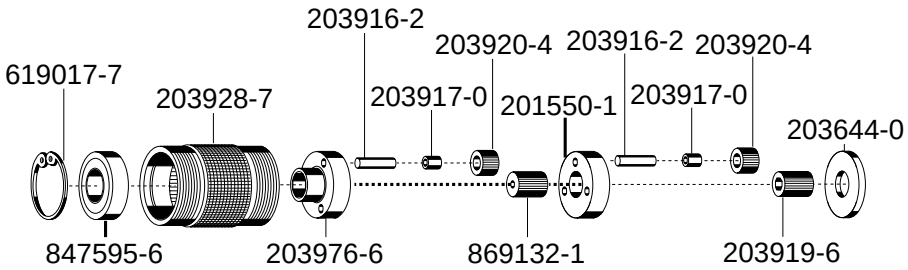
PARTS LIST — 5 CLECOMATIC CLUTCH FOR -104, -174 & -254

Part No.	Name of Part	Qty.	Part No.	Name of Part	Qty.
203572-3	Clutch Cam	1	619017-7	Retainer Ring*	1
203573-1	Ball Retainer	1	842161-2	Ball (3/16")	4
203574-9	Retainer Ring	1	842980-5	Ball (3/32")	13
203575-6	Torque Spring - White	1	844305-3	"O"-ring (3/8" x 5/16")*	1
203578-0	Torque Spring - Yellow	1	847095-7	Ball Bearing*	1
203579-8	Torque Spring - Green	1	847104-7	Needle Bearing	1
203580-6	Torque Spring - Blue	1	863455-2	Thrust Race	2
203584-8	Adj. Cover (incl. in 203626)*	1	869112-3	Reset Pin	1
203585-5	Clutch Reset Spring	1	869123-0	Adjustment Nut	1
203589-7	Spring Spacer	1	869140-4	Adjustment Lock Ring	1
203612-7	Trip Slide	1	869149-5	Ball Retainer Plug	1
203613-5	Slide Reset Spring	1	869424-2	Reset Pin Stop	1
203625-9	Clutch Spindle	1			
203626-7	Clutch Housing (incls. 203584)*	1			
617226-6	Dowel Pin	1			

The complete clutch can be purchased using these part numbers: 201461-1
* Not included in subassembly.

-104, -174 & -254 1ST REDUCTION GEAR TRAINS

-104 1ST REDUCTION GEAR TRAIN

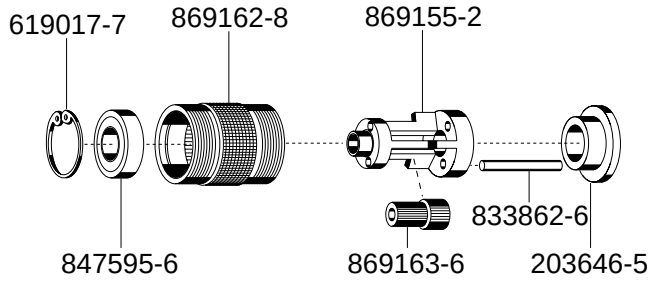


PART LIST — -104 GEAR TRAIN

PART NO.	NAME OF PART	QTY.
201550-1	-10 Reduction Spider (incls. 869132, 203916)	1
203644-0	-10 Motor Spacer	1
203916-2	-10 Idler Gear Pin	6
203917-0	-10 Idler Gear Bushing	6
203919-6	Rotor Pinion (13T)	1
203920-4	-10 Idler Gear (14T)	6
203928-7	-10 Gear Case (41T)	1
203976-6	-10 2nd. Red. Spider (incls. 203916)	1
619017-7	Bearing Retainer Ring	1
847595-6	Spider Bearing	1
869132-1	-10 Spider Pinion (13T)	1

The complete gear train can be purchased as a subassembly using the following part number: -104 — 201587-3

-174 1ST REDUCTION GEAR TRAIN

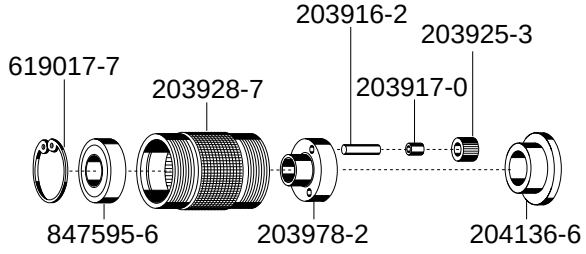


PARTS LIST — -174 GEAR TRAIN

PART NO.	NAME OF PART	QTY.
203646-5	Motor Spacer	1
619017-7	Bearing Retainer Ring	1
833862-6	Idler Gear Pin	3
847595-6	Front Spider Bearing	1
869155-2	Spider	1
869162-8	Gear Case (27T)	1
869163-6	Stepped Idler Gear (9T & 18T)	3

The complete gear train can be purchased as a subassernbly using part number: 201474-4.

-254 1ST REDUCTION GEAR TRAIN

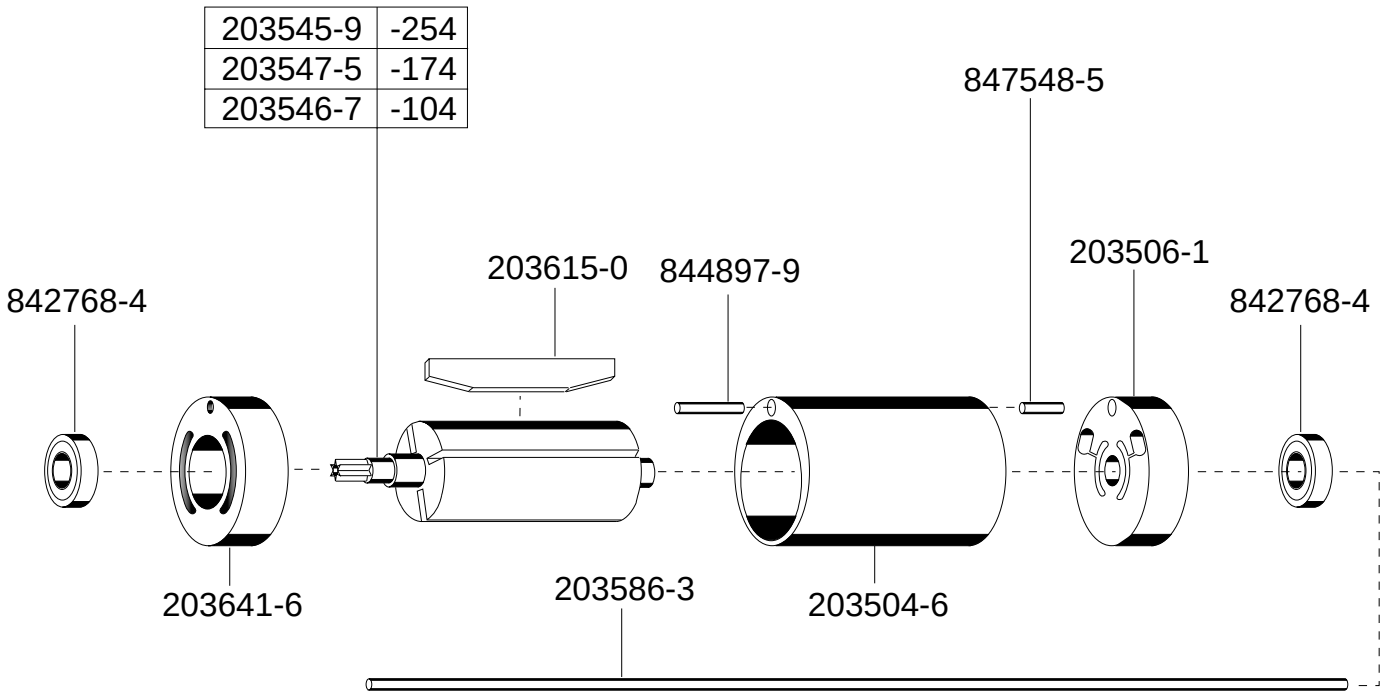


PARTS LIST — -254 GEAR TRAIN

PART NO.	NAME OF PART	QTY.
203916-2	Idler Gear Pin	3
203917-0	Idler Gear Bushing	3
203925-3	Idler Gear (16T) (incls. 203917)	3
203928-7	Gear Case (41T)	1
203978-2	Spider (incls. 203916)	1
204136-6	Motor Spacer	1
619017-7	Bearing Retainer Ring	1
847595-6	Spider Bearing	1

The complete gear train can be purchased as a subassembly using part no. 201588-1.

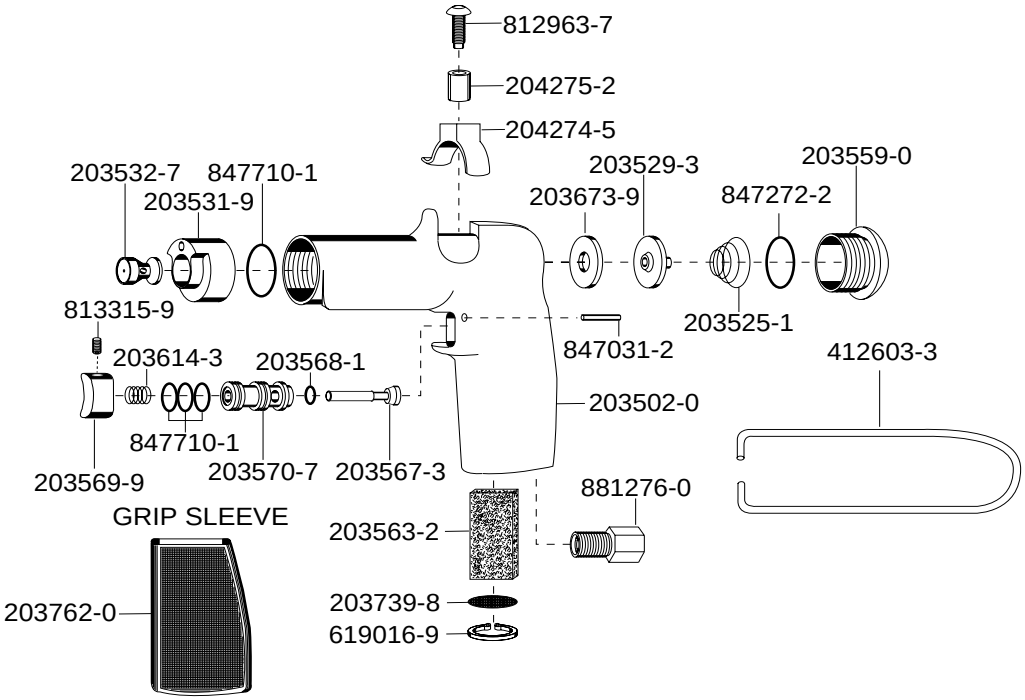
5 — -104, -174 & -254 MOTOR



PARTS LIST — 5— -104, -174 & -254 MOTOR

Part No.	Name of Part	Qty.
203504-6	Cylinder	1
203506-1	Rear Bearing Plate	1
203545-9	Rotor -254 (7T)	1
203546-7	Rotor -104 (Hex)	1
203547-5	Rotor -174 (6T)	1
203586-3	Trip Rod (Clecomatic)	1
203615-0	Rotor Blade	4
203641-6	Front Bearing Plate	1
842768-4	Bearing	2
844897-9	Front Cylinder Pin	1
847548-5	Reversible Rear Cylinder Pin	1

5 REVERSIBLE CLECOMATIC TRIGGER PISTOL GRIP HANDLE (RSATP)

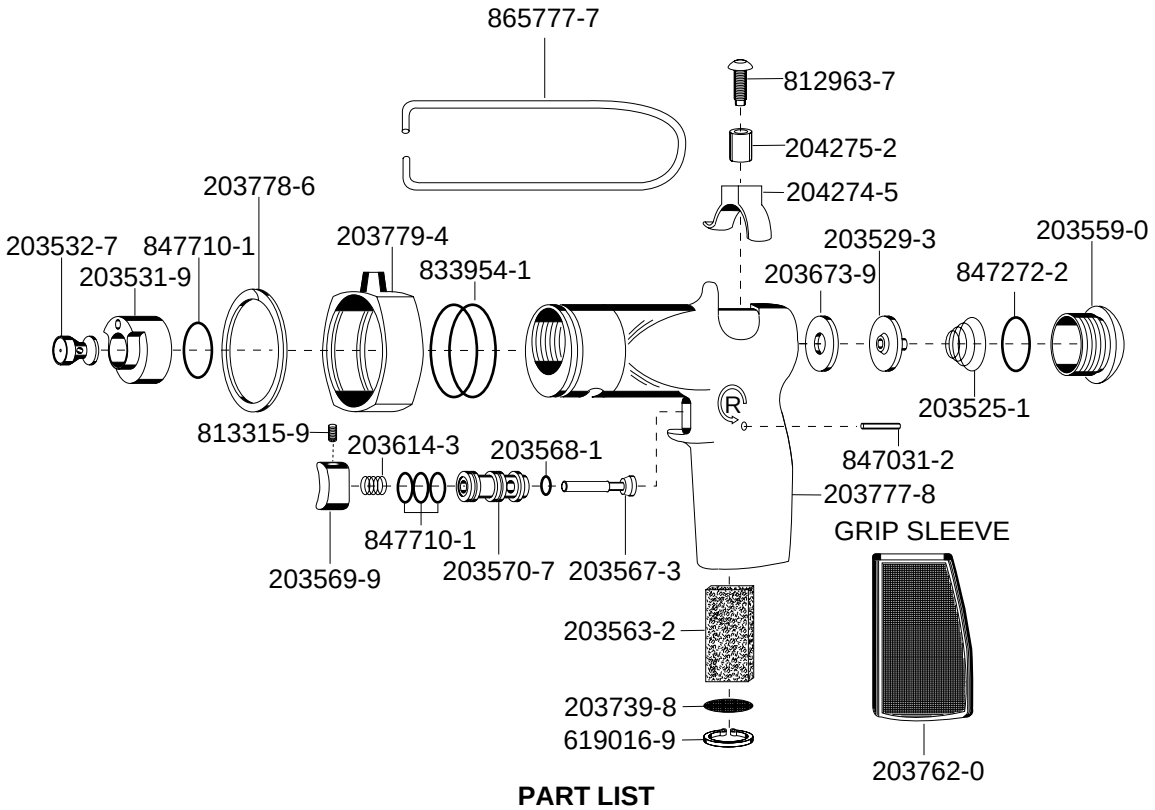


PART LIST
REVERSIBLE CLECOMATIC TRIGGER PISTOL GRIP HANDLE

PART NO.	NAME OF PART	QTY.
203502-0	Handle	1
203525-1	Shut-off Valve Spring	1
203529-3	Shut-off Valve	1
203531-9	Reversing Valve	1
203532-7	Motor Spacer	1
203559-0	Valve Cap	1
203563-2	Muffler	1
203567-3	Throttle Valve*	1
203568-1	"O"-ring (11/64" x 3/8")*	1
203569-9	Trigger (incl. 813315)*	1
203570-7	Throttle Valve Bushing*	1
203614-3	Trigger Spring*	1
203673-9	Shut-off Valve Seat	1
203739-8	Screen	1
203762-0	Grip Sleeve	1
204274-5	Reversing Valve Knob	1
204275-2	Reversing Knob Spacer	1
412603-3	Bail	1
619016-9	Retainer Ring	1
812963-7	Reversing Valve Screw	1
813315-9	Set Screw*	1
847031-2	Roll Pin	1
847272-2	"O"-ring (5/8" x 3/4")	1
847710-1	"O"-ring (1/2" x 5/8")*	4
881276-0	Inlet Bushing	1

The complete Handle can be purchased as a subassembly using the following part number: 201433-0
The complete Trigger subassembly can be ordered using part number: 201435-5
*Part included in Trigger subassembly.

5 UPPER INLET REVERSIBLE CLECOMATIC TRIGGER PISTOL GRIP HANDLE (RSAUPT, RSAUTP)



PART LIST
5 UPPER INLET REVERSIBLE CLECOMATIC TRIGGER PISTOL GRIP HANDLE

PART NO.	NAME OF PART	QTY.
203525-1	Shut-off Valve Spring	1
203529-3	Shut-off Valve	1
203531-9	Reversing Valve	1
203532-7	Motor Spacer	1
203559-0	Valve Cap	1
203563-2	Muffler	1
203567-3	Throttle Valve*	1
203568-1	"O"-ring (11/64" x 3/8")*	1
203569-9	Trigger (incl. 813315)*	1
203570-7	Throttle Valve Bushing*	1
203614-3	Trigger Spring*	1
203673-9	Shut-off Valve Seat	1
203739-8	Screen	1
203762-0	Grip Sleeve	1
203777-8	Handle	1
203778-6	Retainer Ring	1
203779-4	Air Inlet Ring	1
204274-5	Reversing Valve Knob	1
204275-2	Reversing Knob Spacer	1
619016-9	Retainer Ring	1
812963-7	Reversing Valve Screw	1
813315-9	Set Screw*	1
833954-1	"O"-ring (1-5/8" x 1-3/4")	2
847031-2	Roll Pin	1
847272-2	Valve Cap "O"-ring (5/8" x 3/4")	1
847710-1	"O"-ring (1/2" x 5/8")*	4

The complete handle can be purchased as a subassembly using the following part number: 201519-6.
The complete Trigger subassembly can be ordered using part number: 201435-5
*Part included in Trigger subassembly.